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get definite evidence as to the fundamental structure of nuclei.

G. S. FULCHER

NATIONAL RESEARCH COUNCIL,  
November 27, 1919

### THE FESTSCHRIFT OF SVANTE ARRHENIUS<sup>1</sup>

*Highly Honored Friend and Master:*

Modern culture is perhaps best characterized by man's enlarging control over nature. But this has not been attained without an increased knowledge of the forces wherewith nature works. Through your now over thirty year old theory concerning force ions, you have made possible a deeper penetration into nature's own workshop than was formerly attainable. Concerning electrolytic phenomena, which your countryman Berzelius, with correct appreciation of their fundamental significance, so diligently studied, you have shed a wonderful light and you have thereby strengthened the foundations for the whole chemical knowledge and this not alone with respect to lifeless nature, but in equally high degree with respect to living nature. "Selten hat ein glücklicher Gedanke," once said W. Ostwald, who was himself the first to understand its meaning, "in so hohem Maasse Licht über weite und schwierige Gebiete geworfen, wie die von Arrhenius entwickelte Idee, dass die Elektrolyte in wässriger Lösung in ihre Ionen dissoziiert sind."

Briefly stated, you have with your theory stirred up a culture wave within the scientific and technical world which will sweep forward through time and thereby you have also become one of our time's culture bearers.

If one may believe Xenophon, Socrates used to advise those who sought help concerning their difficulties, to carry out that which they knew should happen, as he deemed best; but otherwise he advised that they ought to have recourse to the art of divination, hearken to the inner spirit, which should give them directions. Thus does also the scientist. When theory is clear he follows it in

the best manner, but when the opposite is true, even he must resort to divination; and a wonderful prophet you have been. You seem once to have had one of these dreams which, as is said, sometimes goes ahead and anticipates the judgment of clear daylight.

Among the friends of Socrates was also Aristippus. It is related concerning him that he like the rest of beauty-loving Athens was sorely smitten by the handsome Lais. One of his friends expressed surprise over this that even he, the sober philosopher, should have been caught in her net. Aristippus, who was no friend of superfluous words, answered merely: Caught, by no means imprisoned. Thus you can also say concerning the ions. You have bound them to reality by unbreakable bonds, but your spirit for research has not let itself be bound to merely this field of labor.

When one wishes to scale the Alps he comes first to the warm, peaceful valleys where living nature steps forward to meet him in all her beauty, and there one might wish to dwell his whole life were not the view so limited. One climbs higher and higher and the horizon widens, but the air becomes sharper, flowers and foliage disappear, and at last one is met by only the cold blasts of snow and ice. Everything would speak of death if in this indescribable silence, in this boundless heaven there was not found something which spoke of the unending, the everlasting. A similar road you have trodden through the research world. You have with your keen vision imagined yourself to see the whole universe's unending space and everlasting time, how the worlds therein develop and dissolve, how all is a *perpetuum mobile*; yes, you have with the camera's help found how the seeds of life sail through the ether ocean from world to world. Such are the wide-embracing views you have given us.

To celebrate the day when you with yet unbroken power and undiminished interest enter upon your seventh decennium, we have with admiration for your research work and in devoted friendship for your person dedicated to you this writing.

<sup>1</sup> Translation of Preface of "Festschrift utgiven Till Svante Arrhenius" 60-Arsdag den 19 Februari, 1919."